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Attached drawings - 4 pages

[54] Invention denomination: The transmission of the electronic  
information databases

### [57] SUMMARY

There are the method and the device, which can be used for transmitting and receiving of the electronic databases (for example the electronic television program directories). The databases include the multi-program items. In order to help the user to recall the item he is interested in the menu bar is to be transmitted too. The menu bars are used in order to enable the many ways visiting of the databases. Each of the transmitted menu bars refers to the program item, but does not include the program item itself (for example, the glossary television system of the foregone format). It is possible to refer in the needed place to the program information being transmitted by the different television stations.

## Capacity requirements

1. There is a kind of method, which can be used for transmitting of the electronic databases of displayable program items to the receiver. The present method includes the separate transmission of the multi-information items and processing the menu bar data, which defines the displaying of all the transmitted information items.
  - 5     2. Taking into consideration the method stated in the Capacity requirement 1, its characteristics also consist in the fact that, in this connection, the defining of the data of the information item quality is mutually relevant to the previously mentioned item; moreover, the menu bar data, in this connection, includes the conditional attribute data matching the quality requirements defining the displaying of the information items.
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3. There is a kind of transmitter, which is used for transmitting of the electronic databases of displayable program items to the receiver. Its characteristics consist in the fact that, the present transmitter includes the device, which is used for transmitting of the multi-information items and the
  - 10   device, which is used for transmitting of the menu bar data, which defines the displaying of all the transmitted information items.
  4. Taking into consideration the transmitter stated in the Capacity requirement 3, its characteristics also consist in the fact that, in this connection, the defining of the data of the information item quality is mutually relevant to the previously mentioned item; moreover, the menu bar data, in this connection, includes the conditional attribute data matching the quality requirements defining the displaying of

the information items.

5. There is a kind of receiver, which is used for receiving of the electronic

- 15 databases of the information items. The present receiver includes the device, which is used for receiving of the multi-information items, the device, which is used for receiving of the menu bar data, which defines the displaying of all the transmitted information items, as well as the device, which is used for producing the displaying signal of all the identified menus of the information items represented by the previously mentioned menu bar data.

6. Taking into consideration the receiver stated in the Capacity requirement 5, its characteristics also consist in the fact that, in this connection, the defining of the data of the information item quality is mutually relevant to the previously mentioned item; moreover, the menu bar data, in this connection, includes the conditional attribute data matching the

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- 20 quality requirements defining the displaying of the information items. The present receiver includes the device, which is used for searching for the information items matching the previously mentioned conditions.

7. There is a kind of video cassette recorder, which includes the receiver corresponding to the receiver stated in the Capacity requirements 5 and 6.

8. There is a kind of signal expressing the displayable information items of the electronic databases, separately including the multi-information items and the menu bar data, which defines the displaying of all the transmitted information items.

- 25 9. There is a kind of memory media, which is used for storing the signal, corresponding to the signal stated in the Capacity requirement 8.

### **The transmitting of the electronic information databases**

The present invention relates to the method, which is used for

- 5 transmitting of the electronic databases of displayable program items to the receiver. In particular, the present invention touches upon the transmission of the electronic television program directories. The present invention deals with the transmitter and the receiver.

It is generally known, that the foregone method and the device, which was previously used for transmitting of the electronic databases of information items to the television receiver are the glossary television. Each of the glossary television pages is an information item itself, or it includes the multi-information items. For example, a browser prearranging the television program in certain quantum of time. Furthermore, the menu page

- 10 is also to be transmitted in order to help the user to recall the item. Each menu page includes the menu items and the page numbers of the glossary television pages. The user recalls the sought information page he is interested in by means of reading the page number from the menu page and pressing the previously mentioned number on the small keyboard, or according to the method published in the USA patent 4,992,871 by means of pointing the indication device at the page number and pressing the OK button. It is possible to transmit the multi-information pages in the form of the tree graph.

In despite of whether to use the glossary television

format or not,

- 15 the transmission of the electronic television video frequency directories will always remain one of the increasingly rising characteristics of the commercial importance. Some television stations (for example, the German Pro 7) deals with the television directory information of many television stations by means of the glossary television. The glossary television page includes the prearranged program of a day or of a part of one day. However, it is possible, that the user holds an interest not only in the prearranged to be broadcasted in a certain quantum of time television programs of some television stations. The user perhaps would also like to know which television program is being broadcasted at the present time by the television station, which can be received, or would need to brows all the
- 20 programs in the certain classification mode (for example, the news). With that end in view, some television stations also transmit the glossary television pages displaying all the programs being broadcasted at the moment by many television stations. In this connection, the problem lies in the fact, that the added glossary television pages require the annexation of the transmitting capacity. All the concerned information pages are to be transmitted time and again. In particular, each program item appears on the page one time while showing all the programs of a single television station, appears on the page one time while showing all the programs being broadcasted at the moment, appears on the page one time while showing all the programs classified in the certain way, and so on.
- 25 One of the aims of the present invention is to avoid the previously mentioned problem. The other aim of the present invention is to offer the method of the transmission of the electronic databases, which can make possible to produce in

the television receiver device more items, which can be visited in an attractive friendly manner, as well as later on to be presented in an attractive form.

30 In accordance with the present invention, the given method consists of the separate transmission of the multi-information items and of processing of the menu bar data, which defines the displaying of all the transmitted information items. Consequently, it can enable the television broadcaster to present the information items in many different ways. Furthermore, the information item itself needs to be transmitted and stored only once. For example, the "Nine o'clock news" program, which is to be broadcasted today on **BBC1**, can appear on the screen, displaying the **BBC1** program for today, on the screen displaying all the programs being broadcasted at the moment, as well as on the screen displaying all the news programs. Moreover, by means of the separate transmission of the menu bars, the vast local processing capacity can be omitted in the receiver. The present invention can transform the television station as it is into the television station, which has the specialty of providing with the television directories. The appearance of the menu is to be determined by the television broadcaster. In addition, it provides with the opportunity to embody the advertisements into the menus.

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5 In the other example of implement of the present invention, the defining of the data of the information item quality is mutually relevant to the previously mentioned item; moreover, the menu bar data, in this connection, includes the conditional attribute data matching the quality requirements defining the displaying of the information items. Now the transmitter needs only to include the sought standard (for example, "news" kind) into all the transmitted menu bars, the receiver in response

automatically displays all the information items matched by the previously mentioned standard.

- 10 The drawing #1 demonstrates the system consisting of the transmitter and the receiver, based on the present invention.

The drawing #2 demonstrates the process flow chart of the transmission of the databases performed by the part of the transmitter, demonstrated in the drawing #1.

The drawing #3 and #4 demonstrate the examples of the different movement phases of the sub-pictures, which are to be displayed by the transmitter, demonstrated in the drawing #1

The drawing #5 demonstrates the explanation of many kinds of menus the transmitter and the receiver, demonstrated in the drawing #1, operate with.

The drawing #6 demonstrates the flow chart of the operations performed by the microprocessor, demonstrated in the drawing #1.

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- 15 The drawing #1 demonstrates the system, which consists of the transmitter 1 and the receiver 2, based on the present invention. The transmitter includes the establishing and updating the information databases compilation terminal 11, the processor 12, the database memorizing storage 13 and the creator 14, which is used for packing the stored database into the TXT pages of the glossary television pages. The transmitter also includes the glossary television inserting device 15, which is used for inserting the glossary television pages into the composite video blanking synchronizing signal CVBS sweep cycle. The television signal obtained in such a way is

- 20 to be transmitted to the modulator 16 and broadcasted on the transmission media 3.



The transmitter includes the tuner 21, which is used for receiving of the television signal. The received signal is to be directly sent to the television monitor 22 in order to display the television program. The present signal is also sent into the glossary television data decoder 23. The microprocessor 25 is connected to the decoder 23 in order to provide with the correlative page numbers, moreover, it is also connected to the storage 24 in order to dispose the information stored in it. The transmitter also includes the graphic generating device 26, it fits to read the prearranged displaying

- 25 segment of the storage 24, as well as to produce the entire picture plane OSD displaying on the screen, which are determined by the data stored in the segment of the present storage. The present picture plane OSD includes the cursor, the position of which is provided by the microprocessor in accordance to the location signal coming from the cursor remote-control device 27.
- 

As a matter of fact, the transmitter described above can adopt the video

- 30 cassette recorder format. The given video cassette recorder is provided with the embedded displaying device 22 or with the separate displaying device 22 – for instance a television set – providing with the displaying signal CVBS and the OSD output.
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The mode of functioning of the transmitter.

At present we are about to explicate the mode of functioning for the purpose of the transmission of the electronic television directories of the transmitter described above. However, the present invention not in the least limits to this application. Each program directory item as well as the data of visiting and unfolding the program directory in the receiver end both are based on the compilation terminal

used by the compilation personnel. The present information is processed by the processor 12 and stored into the different parts of the storage device 13. Each part of the storage device henceforth is defined to be called the quantificational data of one section of the database.

- 5 Then, the glossary television page creator 14 packs each program into one or many glossary television pages. Because of the fact that the glossary television pages are not to be displayed directly, they are provided with the receiving system page number 16. In order to transmit the error exceptional susceptible data, for example, the file header, the date and the time, the extension of the strings, the numbers of the glossary television pages and so on the clear space protection is used. The first glossary television page is provided with the prearranged page number (for example, 3A0) and in addition, it includes a content table. It is the tote data stream list box of the

- 
- 10 glossary television page numbers. In case that the content table can not be completely put into the glossary television page, the reference to the subsequent glossary television pages is to be created.

The drawing #2 demonstrates the flow chart of the transmission process performed by the transmitter. Each step includes the transmitting of one program database and at the same time the transmitting of the corresponding segment stored in the storage device 13. Each program refers to the certain function and, moreover, includes, for example, the parameters, the numerical values, the literal strings, the attributes and many

- 15 other data items. In the step #31, the basic information section, which includes, for example, the date and the time basic data along with the other universal data, is transmitted in order to manage the storage device of the simple television receiver. In the step #32, the layout information

section is transmitted in order to be used as a multi-engineering facility defining the form of the electronic program directory. In the step #33, the graphic section is transmitted in order to define all the graphic pictures displayed on the screen. In the step #34, the table information section is transmitted; it defines a group of the attributes, which can be related to the information section. In the step #35, the menu information section is transmitted for

- 20 delivering the menu bar data of the visiting programs directory. In the step #36, the program information section is transmitted. It is used for the purpose of establishing the television programs directory database. In the step #37, the transmission of the database is concluded by transmitting the "protocol concluding code". Such a database is to be transmitted periodically, for example, umpty times per day.

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In what follows we are going to describe each of the sections in detail. Taking into consideration the fact that not all the sections are of equal importance in respect of the present invention, for some of the sections only the brief argumentation is given. In the description given below, the double line frame denotes each of the sections. A group of items included into the

- 25 segment can compose the block. Such a block is denoted by the single line frame. In case that the data item or the bock is to be transmitted repeatedly, the sign "+ +" is to be put after it. For example, the section :

Item\_1

+ +

Item\_2

Item\_3

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includes three data items, among them the block including the item 2 and the item 3 can be transmitted repeatedly. Each of the sections starts from the section header. It is a code identifying the section and indicating the beginning of it. The type of the data (for example, the byte, the character, the character string) is not presented here, because of the fact that it is not important in respect of the present invention.

#### The basic information section

The given section includes, for example, the date and the time basic data along with the other universal data, which is used in order to manage the storage device of the simple television receiver. The basic information section has the following format:

## **BASIC\_HEADER**

**date**

**time**

**no\_programmes**

**no\_menuitems**

**no\_criteria**

**no\_graphic**

**poolsize**

Here, **date** and **time** represent the date and the time of issue of the

- 
- 5 database. **no\_programmes** is the number of programs included into the program information section. **no\_menuitems** is the number of the menu items included into the menu information section. **no\_criteria** is the number of the criteria of the denotation information section. **no\_graphic** is the general number of the graphics, including the logos, defined in the table information section. **poolsize** is the size of the whole title, of the program information as well as of the description and the criteria denomination.

The layout information section

- 10 The present section gives a multi-engineering facility to the provider of the electronic program directory. The format of the given section is:

## **LAYOUT\_HE**

## **ADER**

**no\_of\_colours**

**colour + +**

**screen\_size**

**no\_of\_arrgmts**

**no\_of\_levels**

**level**

**layout\_data**

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**+ +**

**+ +**

**no\_of\_colours** and **colour** + + separately define the extent and the content of the color find table. The standard glossary television color table is used as a default. The rest of the parts of the present section define the appearance on the screen of the different menus. **Screensize** presents the level and the vertical orientation as well as the size of the pixel units of the whole screen. Because of the fact that the menu is organized in the form of the tree graph, each menu is distributed to one **level** (level). It has **no\_of\_levels** of usable levels. For example, as it is described below, two menus of different levels can be displayed simultaneously. It is called the “arrangement”. The number of the arrangements is specified by **no\_of\_arrgmts**. The **layout\_data** item defines the headline of the menu and the highness, the fonts, the color, the position, the intervals of the menu item and the other characteristic data blocks.

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## 5 The graphic section

In the present section one or more pictures, which can be displayed on the screen (hereinafter also simpler called “the graphics”) are defined. The common format of such a section is:

**GRPHC\_HEA**

**DER**

**no\_grphcs**

**grphe\_no**

**graphic**

+ +

Here, **no\_grphcs** represents the number of graphics defined in the

- 10 present section. **grphc\_no** is the prearranged number of the pictures transfer. The data item **graphic** itself is the data block of the rectangle pictures. In this protocol, the graphics of 4 types are distinguished: the bitmaps, the symbols, the dynamic icons and the literal strings. The bitmap is the universal term for the graphics. It is the rectangle lattice of the pixels forming the picture. The symbols and the dynamic icons are the bitmaps too, but they are provided with the special stipulation. The symbols are used in the literal strings. The characters containing the symbols, including the (**escape**) character, are provided with **grphc\_no** in order to transfer
- 15 the given symbols. The dynamic icons consist of 2 or more prearranged sequences of the bitmaps. Each of the bitmaps represents one phase of movement of the dynamic icon. By means of the periodic displaying of all the related phases of movement, the observer sees one bitmap following the other, in such a way the simple displaying of the animated graphics comes into being. The time of displaying of each of the phases can be fixed in the receiver, or it can be transmitted as a data item of the section. The dynamic icon, provided with one single phase, is a symbol. Each phase “over loads”
- 20 the color table, each of the phases, as well as the common bitmap, is provided with the full color table. The dynamic icons can be used in the same way as the symbols. The drawing # 3 and #4 demonstrate the examples of the dynamic icons. Two phases of movement demonstrated on the drawing #3 produce the effect of the very short time. For example, it relates to the television program about the crows.



- 25 Since the bitmaps, the symbols and the dynamic icons can chase the coding of each pixel, they also can use the course coding. The type and the coding method of the graphics are defined in the section header, in order to achieve this purpose, the program header is provided with the multi-probability capacity.

The format of the **graphic** block of the bitmaps, chasing the coding of each pixel, of the symbols and of the dynamic icons is:

**bits\_per\_colour**

**colour\_table**

**x\_tlcorner**

**y\_tlcorner**

**x\_xtns**

**y\_xtns**

---

**pixel\_block**

Here, **bits\_per\_colour** defines the number of the colors, which can be used, while the **colour\_table** defines the three numerical value array of each kind of color by means of using the red, green and blue distinction.

- 5 The parameters **x\_tlcorner** and **y\_tlcorner** define the position of the bitmap on the screen by means of using the positions of the characters. The parameters **x\_xtns** and **y\_xtns** define the size of the bitmap on the screen accordingly to the pixel units. **pixel\_block** defines the color of each pixel by means of using the color find table index in accordance with the predefined scanning sequence. Each of the color indexes is composed by the **bits\_per\_colour** bits.

The format of the **graphic** block of the course coding bitmaps, of the symbols and of the dynamic icons is:

10

**bits\_per\_colour**  
**colour\_table**  
**x\_tlcorner**  
**y\_tlcorner**  
**x\_xtns**  
**y\_xtns**  
**pbldsize**  
**pixel\_block**

Where, most of the items correspond to the table above. The parameter **pbldsize** defines the size of **pixel\_block**, this time it contains the multi- course coding. The method of applying the course coding to the graphic images is well known.

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The table information section

The table information section defines a group of the attributes, which

- 15 can be related to the information item (hereinafter referred to as the criteria). The criteria are defined by the provider of the information, but they must correspond to one of the meta criteria types listed below. Each section establishes one criteria table

**TABLE\_HEA**  
**DER**  
**type**

**no\_of\_items**  
**item\_no**  
**item**

+ +

Every **type** defines one list box of criteria, defined, for example, in the table below. The program can be provided with the specifically criteria. If it is so, they appear in the list box of the program, which fulfills the requirements of the given criteria. **no\_of\_items** provides with the extent of the list box. **item\_no** and **item** always appear simultaneously. All the criteria referenced to **item\_no** are called the **item** prescriptive. Under the rated circumstances there is no **items** and the **item** character string is

- 
- 5 empty. Under the broadcaster logo circumstances, **items** are formed in accordance with what is defined in the graphic section.

Meta criteria	Type
---------------	------

0
1
2
3
4
5

10 + i

**broadcaster**

**broadcaster's logo**

**language**

**keywords**

**category**

**rate**

**subtype [ i ]**

The menu information section

The visiting program menu, carried in the menu information, can also be

- 10      used in order to transmit the non-program information, for example, the news or the help information. It has defined the diagrammatical layered tree graph; each of the diagrams consists of the main heading and the several items. Each item can be enlarged to a new, more detailed picture table. In what follows an example of the menu bar is given. The following table shows the transmission format of the menu information section.
-